

## ABSTRACT

A method of manufacturing a thin-film magnetic head allowing dimension control of the width of the magnetic pole and reduction of the time required for formation is provided. A layer of iron nitride formed by sputtering is selectively etched with the RIE to form a top pole tip. In this etching process with RIE, chlorine-type gas is selected as a gas seed for etching, and the process temperature is in a range of 50 °C to 300 °C. Subsequently, using part of a first mask and a tip portion of the top pole tip as a mask, part of both the write gap layer and the second bottom pole are etched with the RIE similarly to the above process, to thereby form a magnetic pole. The etching conditions are optimized by performing the process with the RIE under the above conditions, so that both of the top pole tip and the magnetic pole can be formed with high precision, and that the time required for forming both of these elements can be significantly reduced.